

WHAT IS CLAIMED

1. A phase shift apparatus comprising:

a plurality of voltage-controlled analog phase shift elements to which respective input signals are supplied and from which phase-shifted output signals, shifted in phase relative to said input signals in proportion to analog voltages supplied to voltage control inputs thereof, are produced;

an analog voltage supply unit having an analog voltage output that is operative selectively produce respectively different analog voltages; and

a sample-and-hold switching network, coupled between said analog voltage supply unit and said voltage control inputs of said plurality of voltage-controlled phase shift elements, and being operative to selectively couple different analog voltages produced by said analog voltage supply unit to said voltage control inputs of any of said plurality of voltage-controlled phase shift elements.

2. The phase shift apparatus according to claim 1, wherein a respective analog phase shift element is comprised of a ferro-electric phase shift element.

3. The phase shift apparatus according to claim 1, wherein said analog voltage supply unit comprises a digital-to-analog converter.

4. The phase shift apparatus according to claim 3, wherein said sample-and-hold switching network comprises respective sets of sample-and-hold switching units having inputs thereof coupled to receive an analog voltage output of said digital-to-analog converter, outputs thereof coupled to analog voltage control inputs of said plurality of voltage-controlled phase shift elements, and control inputs thereof coupled to receive switching control signals in association with digital inputs to said digital-to-analog converter.

5. The phase shift apparatus according to claim 1, wherein said voltage-controlled phase shift elements include phase shift elements that are operative to produce phase shift outputs linearly proportional to analog voltages supplied to voltage control inputs thereof.

6. The phase shift apparatus according to claim 1, wherein said voltage-controlled phase shift elements include phase shift elements that are operative to produce phase shift outputs non-linearly proportional to analog voltages supplied to voltage control inputs thereof.

7. A method of imparting controlled phase shifts to a plurality input signals so as to produce phase-shifted output signals, that are shifted in phase

relative to said input signals, said method comprising the steps of:

(a) coupling said respective ones of said plurality of input signals to respective ones of a plurality of analog voltage-proportional phase shift elements, which are operative to impart prescribed amounts of phase shift to input signals applied thereto in accordance with control voltages supplied to voltage control inputs thereof;

(b) providing an analog voltage supply unit having an analog voltage output that is operative selectively produce respectively different analog voltages;

(c) coupling a sample-and-hold switching network between said analog voltage supply unit and said voltage control inputs of said plurality of voltage-controlled phase shift elements; and

(d) controlling the operation of said sample-and-hold switching network so as to couple different analog voltages supplied thereto by said analog voltage supply unit to voltage control inputs of selected ones of said plurality of voltage-controlled phase shift elements.

8. The method according to claim 7, wherein a respective analog voltage-proportional phase shift element comprises a ferro-electric phase shift element.

9. The method according to claim 7, wherein said analog voltage supply unit comprises a digital-to-analog converter.

10. The method according to claim 9, wherein said sample-and-hold switching network comprises respective sets of sample-and-hold switching units having inputs thereof coupled to receive an analog voltage output of said digital-to-analog converter, outputs thereof coupled to analog voltage control inputs of said plurality of voltage-controlled phase shift elements, and control inputs thereof coupled to receive switching control signals in association with digital inputs to said digital-to-analog converter.

11. The method according to claim 7, wherein said voltage-controlled phase shift elements include phase shift elements that are operative to produce phase shift outputs linearly proportional to analog voltages supplied to voltage control inputs thereof.

12. The method according to claim 7, wherein said voltage-controlled phase shift elements include phase shift elements that are operative to produce phase shift outputs non-linearly proportional to analog voltages supplied to voltage control inputs thereof.